

BUILDING TRADES AND CONSTRUCTION

EDUCATIONAL SPACES

Printing Instructions

1. Print the Table of Contents section to obtain an overview of the total document.
 2. Print each document section that you are interested in.
 3. For a *complete* document, please *print all* sections.
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BUILDING TRADES AND CONSTRUCTION

GENERAL PROGRAM GOALS AND OBJECTIVES

- ☐ Building Trades and Construction is a program designed to prepare students with skills to lay out, fabricate, erect, install, and repair structures and fixtures, using hand and power tools. Included in the program is instruction in common systems of framing, construction materials, estimating, and blueprint reading. The program also includes training in applied communications, and employability skills including leadership, human relations, and safe efficient work practices. Instruction at the secondary level requires a three year sequence of instruction with at least one multiple period block of instruction. Programs will have the opportunity to offer the National Center for Construction Education and Research (NCCER) curriculum as the preparation for student certification and testing through the Association of General Contractors (AGC).

PROGRAM ACTIVITIES

- ☐ Safety Training
- ☐ Power Tool Instruction
- ☐ Measurement
- ☐ Blue Prints
- ☐ Basic Rigging
- ☐ Testing

- ☐ Mathematics/Calculating
- ☐ Pricing/Contracts
- ☐ Legal Specifications
- ☐ Heavy Equipment Use
- ☐ Cabinet Making
- ☐ Surveying
- ☐ Drywall
- ☐ Painting
- ☐ Roofing
- ☐ Storing
- ☐ Cutting, Hammering and Nailing
- ☐ Sheet metal work

AREAS

DESCRIPTION	EST. STAFF	EST. STUDENTS	SQ. FT. TOTAL
Lab	1-2	15-25	2400
Classroom	1-2	15-25	900
Storage (materials)			200
Storage (outside)			200
Storage (tools)			200-300
Repair Lab	1	2-4	100
Mech. Space			200
Haz Mat Storage			50
Office	1		150
Lockers/Cleanup		15-25	200
Finishing Room	1	2-3	300-400
Custodial Closet			50

INTERNAL/EXTERNAL RELATIONSHIPS - WHAT SHOULD BE NEAR THIS AREA

- ☐ Welding, engines and related programs such as CAD and mathematics should be near this area.
- ☐ The construction delivery should be close to the lab.
- ☐ The office should be near the lab.
- ☐ The lab and equipment storage should be contiguous.

INTERNAL/EXTERNAL RELATIONSHIPS - WHAT SHOULD **NOT** BE NEAR THIS AREA

- ☐ This area should be far from core classes and the media center because of noise.
- ☐ Hazardous materials should be stored away from the lab.

UTILITIES

Plumbing:

- ☐ Water and compressed air need to be installed at each work station.
- ☐ A large hand sink needs to be installed in the lab.
- ☐ There needs to be water and a deep sink at the clean up area.
- ☐ The custodial closet needs a floor sink.
- ☐ A hose bib needs to be installed at the outside doors and in the lab area.
- ☐ Compressed air needs to be installed in the finishing room.
- ☐ Water needs to be plumbed to the eye wash and shower area.
- ☐ Floor drains should be installed in the shower area.
- ☐ Plumbing should be positioned or dampened to minimize noise.

HVAC

- ☐ Dust collection and particulate filtration is necessary at each station.
- ☐ Positive pressure is needed in the classroom and office.
- ☐ Energy efficient equipment should always be considered.
- ☐ Extra ventilation is needed in the finishing room.
- ☐ The heating, ventilation, and air-conditioning system needs to be of

sufficient size to keep each instructional space at a comfortable temperature.

- ☐ The system needs to have a fresh air exchange system to keep high air quality in each instructional space.
- ☐ The general classroom supply and exhaust ducts need to be positioned to minimize any draftiness in the room.
- ☐ The HVAC controls need to be designed to allow individuals the ability to modify the classroom temperature for the instructional requirements of the classroom activities.
- ☐ The controls need to be positioned so that the room temperature is not “misread” (e.g., not too close to a door, window, or vent).

Electrical:

- ☐ 220 and 110 volt outlets are required at each work station.
- ☐ Overhead electrical drops are necessary.
- ☐ An oversized electrical system is necessary for future expansion.
- ☐ Battery recharging station is needed in the tool room.
- ☐ Electrical power is needed to the overhead doors.
- ☐ A master shut off switch to equipment is needed in the lab.
- ☐ Special power needs may be necessary for special equipment.
- ☐ Electrical supply outlets need to be sufficient to meet the electrical equipment needs of the modern classroom.
- ☐ Electrical supply outlets need to be placed on each stationary wall and at the counters in each classroom. Floor outlets need to be placed in front of any operable walls.
- ☐ Electrical supply outlets need to be provided for any built-in audio-

visual equipment installed in the classroom (e.g., television, VCR, electric ceiling screen, etc.) Controls for the screen should be located by the light switches.

- ☐ Each classroom should have occupancy sensors installed for lights.

Lighting:

- ☐ Task lighting is needed at all workstations.
- ☐ T-8 lighting or high pressure sodium should be considered.
- ☐ Side and top lighting are needed in the finishing area.

Technology:

- ☐ Data drops are needed at the following areas:
 - Office
 - Classroom (4-6 drops)
 - At video screen area
- ☐ Telephones are needed in the classroom, lab and office.
- ☐ Each classroom needs to have access to cable TV for commercial, satellite and closed circuit broadcasts over the cable.
- ☐ Telephone jacks should be placed near the door to the classroom and near the teacher's area.
- ☐ The telephone system should be programmed to enable outgoing calls directly from the classroom. All incoming calls should go through the main office switchboard.
- ☐ Each classroom should be equipped with an integrated clock, intercom, and bell system.

- ☐ Each classroom should be equipped with a TV/VCR, electric screen, overhead/LCD projector. Those classrooms that have moveable walls, the TV/VCR needs to be placed away from the moveable wall for noise separation.
- ☐ The area should be wired with data cable to enable the connection of a local area network and a wide area network.

SURFACES

Floors:

- ☐ Vinyl composition tile in the classroom and office is desired.
- ☐ Sealed concrete in all other areas should be considered.
- ☐ Safety striping is needed in zoned areas.

Walls:

- ☐ Washable, durable, painted walls are necessary.
- ☐ Windows are needed in the interior walls between the lab and office.
- ☐ Natural light should be available where practical.
- ☐ Some tackable wall surface is necessary in the classroom and the lab.
- ☐ White boards with friction clips should be installed in the classroom.
- ☐ Walls should be painted a light color.
- ☐ Wall and ceiling surface materials need to accommodate the acoustical needs of the classroom.
- ☐ Windows need to be of double pane glass and have operable

integral blinds where practical.

Ceilings:

- ☐ Acoustical tile ceilings in the office and classroom.
- ☐ Ceiling height of 12'-15' is necessary in the lab.
- ☐ Acoustical treatment of walls and ceilings is necessary in the lab.

Doors:

- ☐ Each general classroom should have a standard sized exit door.
- ☐ Each general classroom door should have a small narrow window.
- ☐ Doors should be hollow metal with kick plates and self closures.
- ☐ The overhead door should be 14'x12'. A remote control door opener should be considered.
- ☐ There should be either a Dutch door or rolling window in the tool room.
- ☐ A double door is needed in the finishing room.

STORAGE

- ☐ Heavy duty shelving is needed in the storage room.
- ☐ Workbenches (4'x5') are needed in the center with storage shelves underneath.
- ☐ Cabinets are needed in the tool room with adjustable shelves.
- ☐ Peg boards should be considered.
- ☐ Storage cabinets for hazardous materials are necessary.
- ☐ Perimeter workbenches are needed for equipment storage.
- ☐ Classroom and offices should have base cabinets and counter tops with knee spaces underneath to act as desks for computer

stations.

- ☐ Each classroom needs to have overhead wall cabinets above the base cabinets.
- ☐ Each classroom needs sufficient storage for those specialized books, magazines, and other instructional materials necessary for successful instruction.
- ☐ Each classroom needs some locking cabinets specifically for the personal effects of the instructors.
- ☐ Space is needed for two (2) four-drawer, letter-size file cabinets.

FURNITURE AND EQUIPMENT

- ☐ Table and radial arm saws
- ☐ Work tables/benches
- ☐ Compressors
- ☐ Drill Press
- ☐ Weight scales for concrete or aggregate.
- ☐ Rafting Auger
- ☐ Tape Reel and Puller (wire)
- ☐ Welders Oxy, Wire, Arc
- ☐ Rafter and Brace table
- ☐ Cable Hoist
- ☐ Power Rotary Hammer
- ☐ Mortar Box and Mixer
- ☐ Transits-laser, sight
- ☐ Air Compressor and attachments

- ☐ Glass Cutter
- ☐ Drywall Lifter/jack
- ☐ Hydraulic Knockout
- ☐ Dozer vehicle, forklift, backhoe
- ☐ Pipe reamers, cutters, threaders
- ☐ Mortise, planer, and jointer
- ☐ Levels, squares, clamps, ladders, etc.
- ☐ Sanders, grinders, drill presses, routers, shapers etc.
- ☐ Sufficient desks, tables, and chairs to meet the needs of the instructional program.
- ☐ TV, VCR, overhead and LCD projector, and an electric ceiling mounted screen.

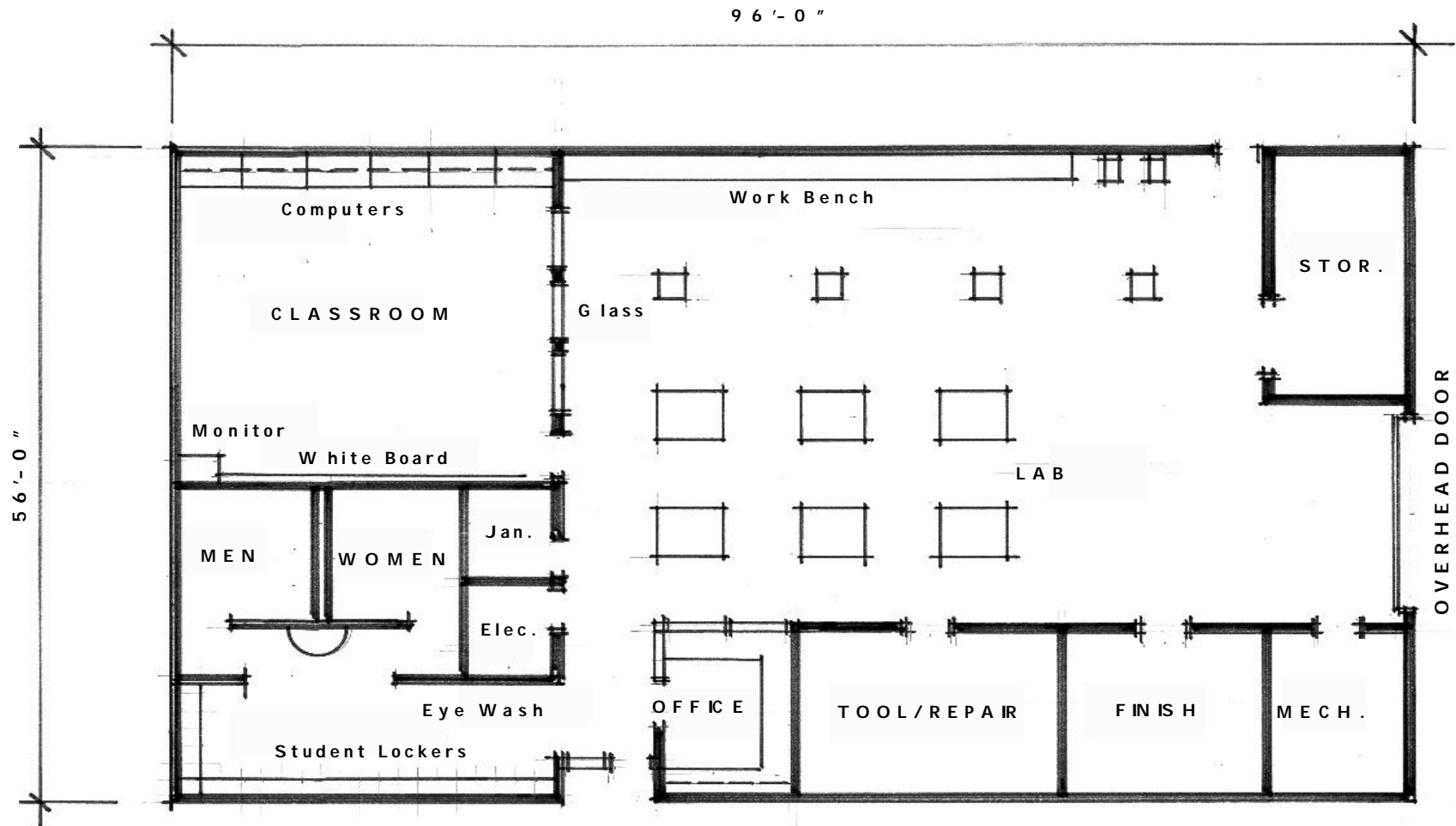
SAFETY ISSUES:

- ☐ First aid kits should be included in the lab area.
- ☐ Safety striping is needed in the work area.
- ☐ All furniture should be ergonomically correct.

IMPORTANT NOTE

The following graphics are intended to show typical spaces and spacial relationships. They are not intended to serve as architectural drawings and are not adapted to specific sites.

These graphics should be used as a starting place for discussions with district personnel, planners, architects and engineers. Almost certainly, changes and adaptations will be required to meet the particular needs of the educational institution and the programs they offer.



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The Matrix Group

Not to Scale